



THE GLIDING FEDERATION OF AUSTRALIA

NATIONAL GLIDING SCHOOL

GUIDELINES FOR INSTRUCTOR TRAINING

Initial rating - Level 1

Based on the GFA Instructor's Handbook and associated Flight Reference Cards

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GUIDELINES

PRE-FLIGHT ACTIONS

When checking candidate in pre-flight actions, ensure that he/she has reasonable knowledge of the type of glider to be used for the rating test. Ask the kind of questions which will ferret out this information.

Not all clubs encourage walk-around inspections, although it is hoped to change this with the introduction of a short section on such inspections in Edition 3 of Basic Gliding Knowledge. It is a good idea to cover this inspection at the training stage, as it gives a good insight into the later acquisition of a Daily Inspector authorisation. If you are dealing with a candidate from a club which does not have walk-around inspections as part of its training “culture”, it is a good opportunity to stress the usefulness of such a procedure, in the hope that the new instructor will spread the word within the club in his new role. Refer to Basic Gliding Knowledge (3rd Edition) for any assistance you may need.

INSTRUCTOR’S DEFENSIVE POSTURE

The main difference between solo flying and instructing is the tricky one of being in command of the glider but not necessarily being in control. This is not an easy problem to resolve and different pilots come to terms with it in different ways. It often makes the difference between a person becoming an instructor or deciding against it.

A very frustrating situation for a student is to fly with an instructor who will not let go of the controls. Very often such an instructor will say things like “that was well done”, when a student knows that it was the instructor who actually did it.

Some instructors never really come to terms with having a student controlling the glider when the instructor is responsible for the outcome. Part of this reluctance is because of an understandable fear of the student doing the wrong thing with the glider, especially near the ground.

The student **will** do the wrong thing occasionally and he/she **will** do it near the ground. Sad but true. If this were not the case, nobody would ever learn to fly gliders.

The trick is to be ready for this to happen and to prepare for it, **without** resting the hands and feet on the controls.

1. Brief the pilot accurately and **briefly**.
2. Above all, be prepared for the student to mishandle the glider, especially near the ground. Adopt a posture such that the right hand is around the bottom of the stick and in front of it, so that control can be regained in an instant by sliding the hand up the stick. The left hand should **always** be behind the airbrakes, to prevent them being opened suddenly or near the ground

All instructors must be properly prepared for these eventualities during instructor training.

AIRMANSHIP

Before entering into the flying sequence, the importance of airmanship must be stressed. Based on the law of primacy, a habit ingrained from the start lasts a lifetime. It therefore follows that good habits from the start are vitally important. An instructor obviously has great influence over the development of a pilot's habits and the habit of good airmanship must be developed early. Good airmanship must be able to be taken for granted in an instructor.

Remember that a definite failure point on an instructor-rating test is poor airmanship.

IN-FLIGHT

In this section, Instructor Handbook page numbers are included to assist in cross-referencing.

STABILITY (Part 2, p14)

When training a candidate to teach pitch stability, emphasise the stable platform of the glider in the trimmed condition. Then go on to explore the inherent stability limits of the glider, by displacing it in pitch from the trimmed condition and observing what it does. Be sure you know yourself what these limits are and don't let things get out of hand.

Roll stability is in two parts, the first part when the glider is actually in motion and the second part when the glider has stopped rolling and is in a steady state at a constant bank angle. The first part is very important, because it entails an understanding of lateral damping the force, which resists roll and which causes us so much trouble when we lose it at the stall. Make sure the candidate has a sound grasp of this phenomenon. The second part is the sideslip/dihedral argument and you will need to exercise care in demonstrating this or it will go horribly wrong.

Stability in yaw is easily demonstrated and the response from the glider is predictable and visible.

Don't sign the box until you are convinced that the candidate has a good understanding of the topic. In particular spend some time on lateral damping, as experience has shown that many pilots have only a sketchy understanding of it and we want to be sure that a budding instructor is not one of these pilots. However, make the point that a student pilot should not be force-fed a complex argument and explanations should be kept accurate and simple.

PRIMARY EFFECTS OF CONTROLS (Part 2, pp 15 to 18)

Proceed to primary effects of controls in accordance with the Instructor's Handbook. Sign the box when the candidate's patten has started to develop some fluency and can be relied upon to develop further in club service.

SECONDARY EFFECTS OF CONTROLS (Part2, pp 18 to 20)

There is no secondary effect of elevator.

Secondary effect of aileron (or more accurately secondary effect of bank) is yaw in the same direction as bank. It takes some time to become apparent and you must ensure that the candidate clearly understands the phenomenon or he/she will confuse a student.

Secondary effect of rudder is bank in the same direction as yaw. **An important demonstration** is as follows: - Progressively apply rudder at about 1.5Vs and observe that the glider yaws strongly and eventually banks. Then reduce speed to a bit less than min. sink and demonstrate again (careful you don't stall the glider). This time you will find that the yaw is much less strong and the bank much more predominant. This is one of the things that drives a glider into the accidental spin without much warning from the yaw string.

At low speeds, excessive rudder produces more roll than it does yaw.

AILERON DRAG, COORDINATION, ROLLING ON A POINT (Part 2, p 20)

In training a pilot to become an instructor, the aileron drag exercise shows more than any other that a skilled pilot has great trouble in deliberately mishandling the glider in order to produce a demonstration. In other words, a potential instructor needs to become skilled at being unskilled (but only for demonstration purposes!). The Level 3 Instructor will need to be patient in persuading the candidate to fly the glider in an uncoordinated manner and will need to demonstrate how to do it well. The follow-on exercise of coordination usually goes much more smoothly and there is little to say about it here.

TRIMMING (Part2, p22)

The main message to get across here is that the trim control is never used as a "mini-elevator". The attitude and speed are to be set using the elevator and the trim is then used to take the load off the stick. Skilled and experienced pilots may have forgotten this basic fact, as their own technique may have evolved into a seamless interchange of attitude, speed and trim setting which is perfectly satisfactory for their own everyday flying but not good enough for demonstration, as it bypasses the illustration of the basic principles.

TURNING (Part2, pp 23 to 26)

If the building blocks of the previous exercises have been skimped, the success of teaching a pilot to turn will be compromised. A student instructor must understand this very clearly.

A greatly under-used exercise during training is varying speed at constant bank angles and varying bank angles at constant speed. In particular, not enough emphasis is placed on ensuring that a student pilot is confident to turn at bank angles of, say 45 degrees. Many pilots in the early stages appear nervous of applying this much bank. Pilots who are not skilled at turning at greater than the normally-accepted "student" bank angles are going to have a lot of trouble staying in thermals and are likely to become frustrated at their lack of success in soaring. The remedy is obvious and it all starts with the basic instructor.

LAUNCH (WINCH/AUTO) (Part 2, pp 38 to 45)

When working with candidates in this sequence, don't forget to cover the "too fast" and "too slow" signals. If you get a slow launch, this is where you discover the value of the "rolling on a point" exercise.

LAUNCH (AEROTOW) (Part 2, pp 51 to 54 and 57 to 59)

No particular comment here. Just follow the handbook.

LAUNCH (SELF) (Part 2, pp 109 to 118)

If a motor glider is used for the instructor training, ensure that you both have a sound working knowledge of the "Instructing in powered sailplanes" section of the Handbook.

LAUNCH EMERGENCIES (WINC/AUTO) (Part 2, pp 45 to 49)

Although not all of these are necessarily tested during the rating test, some of them might be sampled and they should all be covered during instructor training to ensure a good standard and full standardisation. Do not sign the box until they are all covered.

LAUNCH EMERGENCIES (AEROTOW) (Part 2, pp 55 to 56)

The same comments apply as those relating to winch/auto tow.

LAUNCH EMERGENCIES (SELF-LAUCH) (Part 2, p 111)

With motor gliders, these come in two categories,

1. Those directly related to an actual motor glider emergency, for example engine failure on take-off.
2. Those, which are simulations of "pure" glider emergencies, such as closing the throttle on climb-out to stimulate an aerotow rope-break. Make sure they are all covered.

STALLING (Part 2, pp 28 to 32)

No particular comment here. Follow the handbook.

INCIPIENT SPINS (Part 2, PP 33 TO 34)

These are more realistic when entered from turns rather than straight flight. Remember the strong roll imparted by the secondary effect of rudder at low speeds. Let the roll develop (do not "hold off bank") and recover the glider when the initial departure occurs.

FULLY DEVELOPED SPINS (Part 2, pp 34 TO 37)

Extend the above exercise into the full spin. This gives a realistic method of spin entry, which accurately simulates what pilots do accidentally. Experience has shown that continual practice is needed to produce consistent and convincing spin entries from a normal nose attitude. Level 3 Instructors may find that they have to spend quite a lot of time perfecting the candidate's demonstration technique. It is time well spent.

Spinning from a normal nose attitude is usually a bit more disorientating than the old “nose high, bootful of rudder” technique. Surprise is a major factor here, and this tends to detract from the likelihood of a pilot under stress recognising what has occurred.

CIRCUIT ACCURACY, APPROACHES AND LANDINGS (Part2, pp 60 to 71)

This is a critical problem area and a high standard of instruction is needed to ensure that correct message gets across. Fortunately every flight has to include a circuit, approach and landing, so there is plenty of opportunity to work with the candidate to develop the necessary high standard.

Detection of undershoots is a difficult and recurring problem in club flying. See that this is well covered during instructor training and ensure that the candidate understands correct use of the airbrakes/spoilers. At the same time ensure that the candidate realises that poor directional control on an approach can result in a last-minute overload situation, possibly through over-concentration on overshoot/undershoot detection. **Every** aspect of approach accuracy is important and it is very easy to get overloaded in the early days of instructing.

When working on the landings, experience has shown that the “Check 1, Check 2” method is effective and considerably reduces instructor anxiety during this critical phase of flight.

Two “musts” for circuits, approaches and landings during instructor training

1. It is essential that the Level 3 Instructor carries out at least one demonstration circuit, approach and landing, including patter, for standardisation purposes. For obvious reasons, such demonstrations must be beyond reproach.
2. It is equally essential that the syndrome of the “underloaded” instructor is demonstrated. The above example of poor directional control is a good way to do this. Most people do not appreciate how quickly underload changes rapidly to overload and then equally rapidly progresses toward total confusion. Demonstrate it with adequate height in hand and make sure the message gets across that instructor concentration near the ground must be complete and there is no room for being “laid back”.

FLYING WITHOUT INSTRUMENTS, RUNNING OUT OF HEIGHT IN THE CIRCUIT (Part 2, p 70)

Do not neglect these exercises and do not necessarily do each of them only once. They really are effective in developing judgement and building confidence.

BOUNCED LANDINGS AND MISHANDLED FLARES (Part 2, p 69)

This is a very critical area and a word of advice is in order for the Level 3 Instructor, who may not get to do this sort of thing very often. During instructor training, the candidate must be taken into the world of bad landing and other variations on mishandling near the ground, as it is most unfair to both parties for a new instructor to encounter this problem for the first time with a student on board. It must be done under carefully controlled conditions and the Level 3 Instructor must know exactly how far to let the glider go, whether it be a mishandled flare, loss of directional control or whatever. There is no advantage in damaging a glider when you are trying to train an instructor and no one will be impressed. Understand the dynamics of the glider you are using, especially its undercarriage layout in relation to its

C of G, and establish a point beyond which you will not let the glider go. **Always** keep the energy level of the glider up when carrying out these exercises.

SOARING (Part 2, pp 90 to 93)

Never let the candidate forget that we are training soaring pilots. It is very unlikely that the entire span of an instructor-training course will be unsoarable, so the opportunity will arise to assess the candidate's ability as a soaring pilot. However, even very skilled soaring pilots are not so skilled when it comes to explaining to someone else how they do it. The Level 3 Instructor will need to develop the candidate's ability to analyse what he/she is doing in order to pass that across to the student in the future. The candidate must be left in no doubt that being an instructor is not a licence to soar at someone else's expense and that an instructor has a direct responsibility to train an effective soaring pilot who will eventually be able to fly safely and efficiently cross-country.

HAND OVER/TAKEOVER PROCEDURE (Part 1, p 21)

Unless this is properly emphasised and the candidate develops the necessary cockpit discipline, it is likely that he/she will join the ranks of those instructors who have had a problem, maybe an accident, due to not knowing who has control.

DEMONSTRATIONS AND AIRBORNE PATTERN (Part 1, p 20)

This is an assessment of progress made throughout the course in these two important instructional areas. Some candidates do not perform well with a very experienced "coach" on board, but will probably be much better in club service when they are confident that they are in command. Bear this in mind, at the same time not making excuses for a person who really isn't shaping up.

FAULT ANALYSIS (Part 1, p 21)

The Instructor's Handbook (April, 1993 edition) contains some sections, which list common faults at various stages during training. The candidate should have a good working knowledge of these faults and their cures, and Level 3 Instructors are encouraged to introduce faults of their own during the course.

BRIEFING AND DEBRIEFING (Part 1, pp 20 and 22)

During the course the candidate's skills in these important areas should be developed, as they will definitely be checked during the rating test.

FLIGHT MANAGEMENT (Part 1, Pp 23 and 24)

This often makes the difference between an effective and an ineffective gliding instructor. Ensure that the candidate understands the need to extract maximum value from each flight and to take all factors into account to enable this to occur.